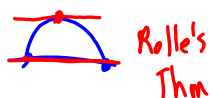
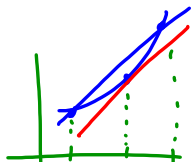


Review 9 MVT

slope of tan = slope of sec

$$f'(c) = \frac{f(b) - f(a)}{b - a}$$

ONLY IF: $f(x)$ is continuous on $[a, b]$
& differentiable on (a, b)

Rolle's
Thm

Ex 1 If $f(x) = x + \ln x$ find the value of x where the instantaneous rate of change of $f(x)$ is equal to the average rate of change of $f(x)$ on $[1, 4]$

$$f'(x) = \frac{f(4) - f(1)}{4 - 1}$$

$$1 + \frac{1}{x} = \frac{(4 + \ln 4) - (1 + \ln 1)}{3}$$

$$x = 2.164$$

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Ex 2

x	0	1	2	3	4
f(x)	2	3	4	3	2

f is cont & diff on $[0, 4]$.

which of the following must be true?

- a) min value of $f(x)$ on $[0, 4]$ is 2
- b) max value of $f(x)$ on $[0, 4]$ is 4
- c) $f(x) > 0$ on $[0, 4]$
- d) $f'(x) > 0$ on $[0, 4]$
- e) $f'(x) = 0$ somewhere on $(0, 4)$

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